

Claims

1. A guide element of a printing unit (05) which is embodied for use with imprinter functions in such a way that in one operational situation a web (02) is imprinted in a printing gap (10) of the printing unit (05), and in another operational situation is conducted without contact through the printing gap (10) over the guide element (01), characterized in that the guide element (01) has a plurality of openings (03) in its surface for the exit of a fluid under pressure, and that the openings (03) are embodied as micro-openings (03) with a diameter of less than 500 μm .

2. A guide element of a printing unit (05) which is embodied for use with imprinter functions in such a way that in one operational situation a web (02) is imprinted in a printing gap (10) of the printing unit (05), and in another operational situation is conducted without contact through the printing gap (10) over the guide element (01), characterized in that the guide element (01) is embodied as a rod, around which air flows and which has a micro-porous air-permeable material (06).

3. The guide element in accordance with claim 1 or 2, characterized in that the guide element (01) is embodied with a circular profile.

4. The guide element in accordance with claim 1 or 2, characterized in that the guide element (01) is embodied with a profile in the shape of a half shell.

5. The guide element in accordance with claim 1 or 2, characterized in that on the side facing the web (02), the guide element (01) is substantially embodied with a profile in the shape of a segment of a circle.

6. The guide element in accordance with claim 2, characterized in that in its surface, the material (06) has a plurality of micro-openings (03) for the exit of a fluid under pressure, which have a diameter of less than 500 μm .

7. The guide element in accordance with claim 1, characterized in that the micro-openings (03) are embodied as open pores of a porous material (06), through which the fluid flows.

8. The guide element in accordance with claim 2 or 7, characterized in that the pores of the fluid-permeable porous material (06) have a mean diameter of 5 to 50 μm , in particular 10 to 30 μm .

9. The guide element in accordance with claim 2 or 7, characterized in that the porous material (07) is embodied as an open-pored sinter material (06), in particular as sinter metal.

10. The guide element in accordance with claim 2 or 7, characterized in that the micro-porous material (06) is embodied as a substantially self-supporting hollow body, which, with its inner boundary line, forms at least one hollow space (04) acting as a pressure chamber (04).

11. The guide element in accordance with claim 10, characterized in that the hollow body made of the porous material (06) has a wall thickness of at least 2 mm.

12. The guide element in accordance with claim 2 or 7, characterized in that the micro-porous material (06) is embodied as a layer (06) of a load-bearing, but at least partially fluid-permeable support (07).

13. The guide element in accordance with claim 12, characterized in that on its side facing the layer (06), the support (07) has at least one support face connected with the layer (06), as well as a plurality of openings (09) for introducing the fluid into the layer (06).

14. The guide element in accordance with claim 12, characterized in that in the area of the support surface the layer (06) has a thickness of less than 1 mm, in particular of 0.05 mm to 0.3 mm.

15. The guide element in accordance with claim 12, characterized in that on its width and length which works together with the layer (06), the support (07) has a plurality of passages (08), in particular not connected ones.

16. The guide element in accordance with claim 12, characterized in that the support (07) is embodied as a support tube (06) with a hollow profile, in particular a profile in the shape of a circle.

17. The guide element in accordance with claim 12, characterized in that a wall (15) of the support (07), which supports the layer (06), has a profile whose curvature is substantially matched to the path of the web.

18. The guide element in accordance with claim 12, characterized in that a wall (15) of the support (07), which supports the layer (06), is embodied as a curved wall (15) of a profile which is substantially in the shape of a segment of a circle.

19. The guide element in accordance with claim 12, 18 or 18, characterized in that a wall thickness of the support (07), or at least of the wall (15) supporting the layer (06), is greater than 3 mm, in particular greater than 5 mm.

20. The guide element in accordance with claim 2 or 7, characterized in that a degree of opening on the outside directed surface of the porous material (06) lies between 3% and 30%, preferably between 10% and 25%.

21. The guide element in accordance with claim 1, characterized in that the micro-openings (03) are embodied as outward-directed openings (03) of micro-bores (11) in a wall (12) bordering the guide element (01) at the outside.

22. The guide element in accordance with claim 21, characterized in that a diameter of the openings (03) is less than or equal to 300 μm , in particular between 60 and 150 μm .

23. The guide element in accordance with claim 21, characterized in that a wall thickness of the wall (12) lies between 0.2 to 3.0 mm.

24. The guide element in accordance with claim 21, characterized in that a hole density, i.e. a number of openings (03) per unit of surface of the surface provided with micro-openings (03) is at least 0.2/mm².

25. The guide element in accordance with claim 1 or 6, characterized in that 1 to 20 standard cubic meters of air per hour exit from a square meter of the surface having the openings (03).

26. The guide element in accordance with claim 1 or 6, characterized in that 2 to 15, in particular 3 to 7 standard cubic meters of air per hour exit from a square meter of the surface having the openings (03).

27. The guide element in accordance with claim 2 or 7, characterized in that the porous material (06) is charged with at least 1 bar of excess pressure from the inside.

28. The guide element in accordance with claim 2 or 7, characterized in that the porous material (06) is charged

with the fluid at at least more than 4 bar, in particular with 5 to 7 bar, of excess pressure from the inside.

29. The guide element in accordance with claim 1 or 6, characterized in that a feed line for feeding fluid to the guide element (01) has an interior diameter of less than 100 mm², in particular between 10 and 60 mm².

30. The guide element in accordance with claim 1 or 6, characterized in that the exterior diameter of the guide element (01) is 60 to 100 mm.

31. The guide element in accordance with claim 1 or 6, characterized in that the guide element (01) has a length of more than 1,200 mm.

32. The guide element in accordance with claim 1 or 6, characterized in that the fluid under pressure is compressed air.

33. The guide element in accordance with claim 21, characterized in that part of the guide element (01) with the micro-openings (03) is embodied as a releasable insert (14) on a support (16).

34. The guide element in accordance with claim 21 or 33, characterized in that an area of the wall (12), or the insert (14), with the micro-bores (11) has a profile whose curvature is substantially matched to the path of the web.

35. The guide element in accordance with claim 21 or 33, characterized in that an area of the wall (12) of the support (07), or the insert (14), with the micro-bores (11) is embodied with a profile which is substantially in the shape of a segment of a circle.

36. The guide element in accordance with claim 5, 18 or 35, characterized in that an angle (γ) of a partial circle of the segment is selected to be between 10° to 45° , in particular between 15° to 35° .

37. The guide element in accordance with claim 5, 18 or 35, characterized in that a width (b01) of the guide element (01) lies between 30 and 150 mm, in particular between 50 to 110 mm.

38. The guide element in accordance with claim 1 or 2, characterized in that in a first mode of operation a first printing unit of at least two printing units (05) is engaged to imprint the web (02), while the web (02) is conducted without contact through a second printing unit (05), and in a second mode of operation the first printing unit (05) is disengaged and the web (02) runs through it without contact, while the second one is engaged and imprints the web (02).

39. The guide element in accordance with claim 1 or 2, characterized in that the web (02) is conducted through five printing units (05), wherein in a first mode of operation the web (02) is conducted without contact over the guide element (01) through one of the five printing units (05),

while the remaining four printing units (05) are engaged to imprint the web (02) in four colors, and in the second mode of operation the printing unit (05), which was previously passed without contact, is engaged in a printing operation, while one of the printing units (05) which was previously printing, is passed without contact.

40. The guide element in accordance with claim 38 or 40, characterized in that at least the two printing units (05) which are selectively to be passed without contact have the contact element (01) in each of the inlet and outlet areas of their printing gap (10).